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ABSTRACT

This study examined changes in student teachers' beliefs related to behaviorist and constructivist learning theories as a result of student teaching and the impact of their cooperating teachers' beliefs on those changes. Participants included all 38 spring 1998 student teachers in an elementary education program at a small state university in Pennsylvania and 71 out of 75 of their cooperating teachers. A survey measured student teachers' and cooperating teachers' beliefs about behaviorist management, behaviorist teaching, constructivist teaching, and constructivist parents. Student teachers were also interviewed individually about their beliefs and student teaching experiences at the end of the semester. Results indicated that most student teachers were more constructivist and less behaviorist than cooperating teachers. Some student teachers and cooperating teachers seemed to believe in both learning theories. Some student teachers' beliefs were changed as a result of their cooperating teachers. Cooperating teachers influenced student teachers through modeling, giving feedback, and encouraging students to take risks. This study suggests that teacher educators should focus on when to use behaviorist and constructivist learning theories rather than the superiority of either theory, and that methods courses may be more powerful in shaping students' beliefs than sometimes reported. (Contains 16 references.) (SM)

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Impact of Student Teaching on Student Teachers' Beliefs Related to Behaviorist and Constructivist Theories of Learning

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Abstract

This study examined changes in student teachers' beliefs related to behaviorist and constructivist learning theories as a result of student teaching, and the impact of their cooperating teachers' beliefs on those changes. Participants included all spring 1998 student teachers (n = 38) in an elementary education program in a small state university in Pennsylvania. A survey measured student teachers' and cooperating teachers' beliefs. Student teachers were also interviewed individually about their beliefs and student teaching experiences at the end of the semester. Most student teachers were more constructivist and less behaviorist than cooperating teachers. Some student teachers and cooperating teachers seemed to believe in both learning theories. This study suggests that teacher educators should focus on when to use behaviorist and constructivist learning theories rather than the superiority of one theory, and that methods courses may be more powerful in shaping students' beliefs than sometimes reported.

Purpose and Background

In this study we asked how important it is to place student teachers with cooperating teachers who have beliefs similar to the ones introduced in our teacher education program. Specifically, we wondered if the impact of methods courses which introduce teaching practices based on constructivist learning theory would be negated if students were later placed with teachers who modeled practices based on behaviorist learning theory. From class discussions and student papers it seemed that students' beliefs became more constructivist as they progressed through our teacher education program, but we wondered if students were only trying to please their instructors and questioned how permanent these apparent changes might be. We assumed that during field experiences students' beliefs are influenced by the beliefs of the experienced professionals with whom they work. That is, we assumed they will become more behaviorist if working with teachers and supervisors who believe in behaviorist learning theory and more constructivist if working with teachers and supervisors who believe in constructivist learning theory.

This paper reports on a study that examined the changes in student teachers' beliefs related to behaviorist and constructivist learning theories as a result of student teaching, and the impact of their cooperating teachers' beliefs on those changes. The study was designed to answer these specific questions:

1. How did student teachers' and cooperating teachers' beliefs about behaviorist and constructivist learning theories compare prior to student teaching?
2. Did cooperating teachers or student teaching change student teachers' beliefs?
3. Did cooperating teachers impact student teachers in other ways?

Related Studies

Students enter teacher education programs with beliefs about teaching. They are not blank slates. Lortie (1975) described students' years of K-12 schooling as a long apprenticeship. Richardson (1996), in a review of research on teacher attitudes and beliefs, cites three sources of teachers' beliefs: (a) personal life experiences which shape a teacher's world view, (b) experiences as a student with schooling and instruction, and (c) formal knowledge including pedagogical content knowledge (pp. 105-6). Since behaviorist learning theories have dominated American education for the last fifty years (Brooks & Brooks, 1993), most teachers and teacher education students would have attended K-12 schools based on behaviorist learning theories.

Researchers have reported difficulty in changing preservice teachers' beliefs during teacher education programs. Some of the reasons that have been suggested include: the short duration of course and program interventions, the critical timing of field and university-based experiences, conflicting pedagogical perspectives of universities and schools, disciplinary backgrounds of preservice teachers, and the powerful socializing influence of the school culture (Meyer-Smith & Mitchell, 1991). Nevertheless, teacher education does seem to have an impact. A difference is observed between the pedagogical content knowledge and classroom actions of teachers who have completed a teacher education program and ones who have not (Richardson, 1996, p. 106).

Student teaching is often described as the most powerful part of teacher education (Richardson, 1996), and cooperating teachers as the most important influence in student teachers' lives (Anderson, Major & Mitchell, 1992). If there is a strong difference between the teaching

philosophies of the teacher education program and the field placement, then research suggests that student teachers' beliefs should change significantly. King (1970) found that student teachers' beliefs related to the teaching of science moved away from their professor's beliefs after student teaching. The important influence of cooperating teachers was reinforced for the first author of this paper by the comment of a student teacher who had taken two of her methods courses: "I know I'm not supposed to like all these worksheets, but I see that they really work. First graders really need them to drill the critical skills." This student teacher was working with a cooperating teacher who used basal texts based on a behaviorist perspective to organize her reading and math programs. This student teacher, who was very aware of her supervisor's more constructivist perspective, was experiencing tremendous dissonance over how to please both her cooperating teacher and her university supervisor.

Both behaviorist and constructivist learning theories are impacting practices in schools today. Behaviorist theories undergird the design of many basal textbooks and standardized tests that continue to control what teachers do in many schools. Behaviorist theories also undergird many special education and behavior management strategies. In the 1980s and '90s a number of reforms in the teaching of science (Duckworth, Easley, Hawkins & Henriques, 1990), math (Fosnot, 1989), and literacy (Cambourne, 1988) have been based on constructivist theories. Whole language, a popular approach to teaching reading and writing, developed independently of constructivism, but the thinking is similar because both developed in opposition to behaviorist conceptions of learning (Kamii, Manning & Manning, 1991). Constructivism is also impacting many teacher education courses and programs as teacher educators experiment with teaching strategies informed by constructivist learning theories (Fosnot, 1996 & 1989; Richardson, 1997).

Method

Participants

All student teachers (n = 38) in the Mansfield University Bachelor of Science in Elementary Education program who were student teaching in the spring of 1998 participated in this study. This elementary program is approved by NCATE and the Pennsylvania Department of Education as a K-6 certification program. Each student teacher was working with two cooperating teachers for one half semester each, usually in two different rural or small city schools in Pennsylvania or New York. All but four cooperating teachers (n = 71 out of 75) also participated in this study.

Data collection

Teacher Beliefs Survey

To assess student teachers' and cooperating teachers' beliefs related to behaviorist and constructivist learning theories, they were asked to complete the Teacher Beliefs Survey (Woolley & Woolley, 1999, in press). The Teacher Beliefs Survey contains twenty-seven statements on four scales (behaviorist management, behaviorist teaching, constructivist teaching, and constructivist parents). Survey statements were developed from interviews with teachers who were selected specifically because observations of their classroom practices suggested varied beliefs. The statements were then piloted with 297 teachers to establish the survey's validity and reliability.

The Behaviorist Management (BM) scale contains eight statements about the extent to which the teacher is in charge of discipline, schedule, and physical and social climate of a classroom. Example statements are: "It is important that I establish classroom control, before I become too friendly with students," and "I believe students learn best when there is a fixed schedule." Four of the eight statements address management of students' behavior, one is about curriculum choices, and three are about the classroom learning environment (schedule, classroom decorations, and distribution of materials).

The Behaviorist Teaching (BT) scale contains eight statements about the extent to which the teacher is in charge of planning, directing and assessing students' learning. Examples are: "I based student grades primarily on homework, quizzes, and tests," and "I find that textbooks and other published materials are the best sources for creating my curriculum." Three of the eight statements are about curriculum planning, three about assessment, and two about teaching strategies. A teacher who agrees with the statements on the BT scale believes in separate subjects, curriculum following textbooks, having students work independently, and assessing students in traditional ways (e.g., homework, quizzes, and tests).

The Constructivist Teaching (CT) scale contains seven statements about the extent to which the teacher involves students in planning, directing and assessing. For example: "I believe that expanding on students' ideas is an effective way to build my curriculum," and "I make it a priority in my classroom to give students time to work together when I am not directing them." Two of the seven statements are about classroom learning environment, two about curriculum, two about assessment, and one about teaching strategies. A teacher who agrees with the statements on the CT scale believes in a more student-centered classroom with students creating bulletin boards, curriculum based on students' interests, subjects integrated, and informal assessment.

The Constructivist Parent (CP) scale contains four statements about working closely with parents. Examples are: "An essential part of my role is supporting a child's family," and "I invite parents to volunteer or visit my classroom almost anytime." Three of the four statements are constructivist and one is behaviorist. When the behaviorist statement is reverse coded, they all emphasize teachers' responsibility to work with students' parents and families by communicating well, making parents welcome in the classroom, and supporting a student's family.

All student teachers completed the Teacher Beliefs Survey on the first day of their student teaching semester. Student teachers were asked to think about their own future classroom and to disagree or agree with each of the statements on a scale of 1 (strongly disagree) to 6 (strongly agree). The same survey was mailed to their cooperating teachers during the half of the semester when their student teacher was not present, so there could be no chance of them completing it together. Surveys were returned by 95% of the cooperating teachers.

Interviews

To understand the student teachers' beliefs and their student teaching experiences from their own perspective, interviews were scheduled with student teachers during or just after the last week of the semester. Interviews were used rather than a repeat of the Teacher Belief Survey to measure changes in student teachers' beliefs since we felt they would remember their earlier responses to the Survey. In addition, we expected interviews to help us understand the

complexities of the student teaching experience from the student teachers' perspectives, as suggested by Guyton & McIntyre (1990) and others (Zeichner, 1986; Johnston, 1994).

Individual interviews were conducted with 35 of the 38 student teachers by the first and third authors and another graduate student who had helped develop the survey. Interviews were audio taped and interviewers made notes. All interviewers followed the same protocol, and after our first few interviews we listened to each other's interview tapes to coordinate our procedures. We began by reading a prepared statement that asked student teachers to think about their own beliefs and their own future classroom as they responded to interview questions, rather than responding in terms of their cooperating teachers' classrooms. Student teachers were asked to discuss their beliefs about classroom learning environment, behavior management, curriculum, assessment, teaching strategies, and working with parents. Statements on the Teacher Beliefs Survey address these same topics. Probing questions were asked to encourage student teachers to fully explain their beliefs. After discussing each topic, student teachers were asked if they felt their beliefs had changed as a result of their student teaching experiences, and if they could identify other influences that had shaped their beliefs on that topic.

Data Analysis

We calculated means for each student teacher and cooperating teacher on each of the four scales and then calculated an average for the two behaviorist and the two constructivist scales. We listened to the interview tapes for common themes and conferred regularly to discuss the meanings of themes that emerged. We considered the list of themes complete when the ideas discussed by student teachers could be categorized by one of the themes. Finally, we counted the number of student teachers who discussed each theme and transcribed quotes to illustrate each quote. In the discussion that follows the number in brackets is the number of student teachers who discussed each theme. The number in parentheses after each quote identifies the student teacher.

Results

How Did Student Teachers' Beliefs Prior to Student Teaching Compare to Cooperating Teachers' Beliefs?

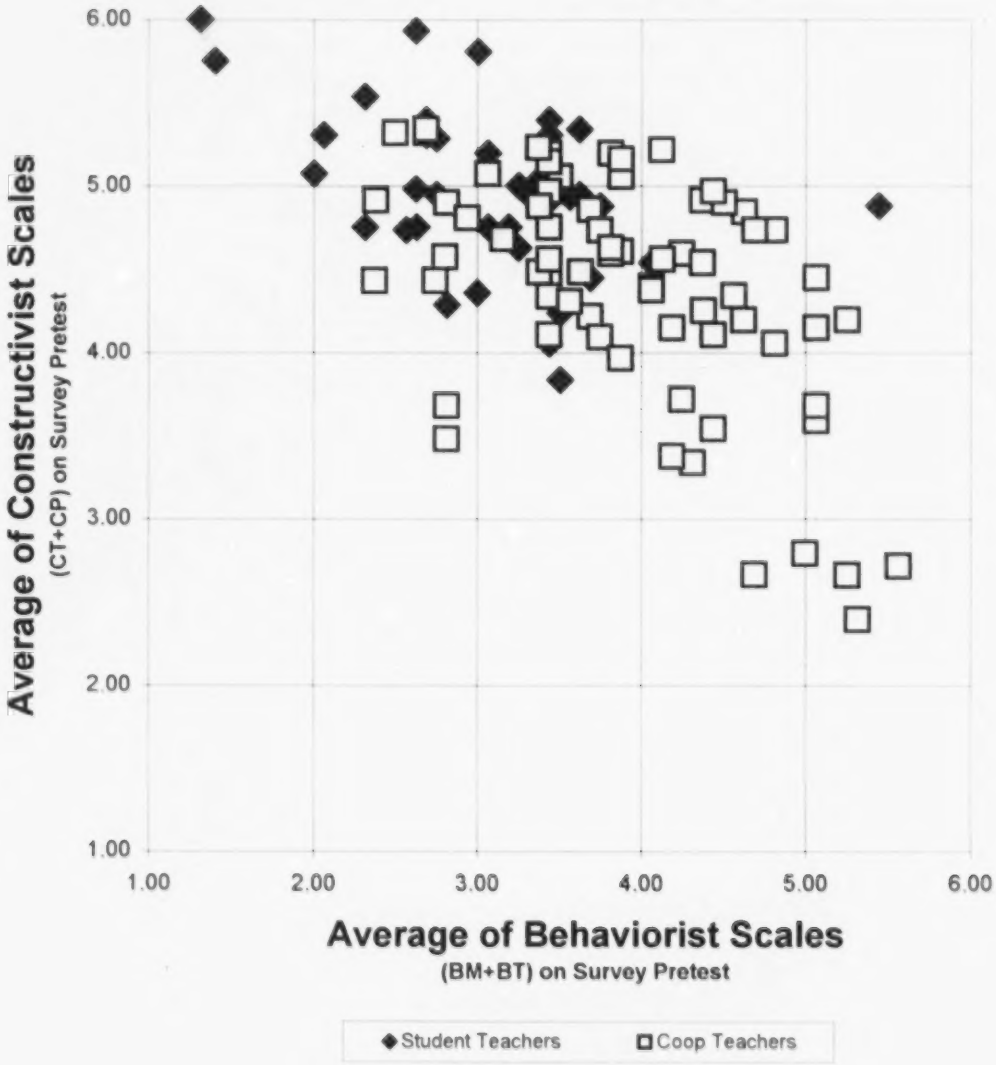
As a group student teachers were less behaviorist and more constructivist than their cooperating teachers on the Teacher Beliefs Survey. Table 1 shows the differences in their means on each scale.

Table 1. Teacher Beliefs Survey

Scales	Student Teachers' Beliefs	Cooperating Teachers' Beliefs	Differences
Behaviorist Management	3.3	4.2	-0.9
Behaviorist Teaching	2.8	3.7	-0.9
Constructivist Teaching	5.0	4.3	0.7
Constructivist Parents	4.9	4.4	0.5

Figure 1 shows this difference graphically. On the x-axis is plotted the average of means on the behaviorist scales (BM + BT). On the y-axis is plotted the average of means on the constructivist

Figure 1. Comparison of the Average of Means of Student Teachers and Cooperating Teachers



scales (CT + CP). Most student teachers' averages are between 2 and 4 on the behaviorist scales and between 4 and 6 on the constructivist scales. Cooperating teachers' averages show more variation with averages between 2.5 and 5.5 on both the behaviorist and constructivist scales.

Differences in individual student teachers' beliefs and their cooperating teachers' beliefs are shown in Figures 2 and 3. In Figure 2 the individual averages on the behaviorist scales (BM + BT) for each student teacher and their cooperating teachers (Coop. # 1 and Coop. # 2) are plotted on the y-axis. The same information is provided in Figure 3 for the constructivist scales (CT + CP). One student teacher dropped out of student teaching (ID no. 57) and one student teacher completed only one experience (ID no. 75). Three cooperating teachers did not return the Teachers Beliefs Survey for student teachers (ID nos. 60, 78, & 85). Figures 2 and 3 also show that many student teachers were less behaviorist and more constructivist than their cooperating teachers. However, individual student teacher-cooperating teacher differences ranged from strongly dissimilar to nearly identical.

Influences prior to student teaching

When asked during interviews if they could identify what influenced their beliefs prior to student teaching, student teachers discussed four themes: (a) their teacher education program [21], (b) their memories from being a student [9], (c) their association with parents and relatives who are teachers [3], and their experiences as a parent. [5].

Sixty percent of the interviewees identified their teacher education program as a source of many of their ideas prior to student teaching. Half mentioned their methods classes, although they frequently could not identify a particular course. Three student teachers described as important experiences the required observations in early courses and six their junior-level observation and participation course. Six student teachers suggested that they didn't have enough preparation in how to discipline children. Although they recognized that many instructors touch on discipline in their courses, they felt a separate course on discipline would have prepared them better.

> *"This is an area I needed to work on a little bit more. I think it would be interesting if there was a course set up to deal with behavior management for any education major. It would be helpful and give us more ideas. I think even the cooperating teachers would like that because they learn from us as we learn from them." (62)*

Nine student teachers mentioned specific memories of their experiences as students that were shaping their ideas about teaching. Some of these memories were positive and others were negative (i.e., things they never want to do as a teacher.)

> *"Ever since I heard about hands-on experiences that is something I favor the most because I remember high school. It was just lecture. I don't remember much about elementary school, only projects. In high school it was just the same routine of books and lectures. I'd like to give students something that I didn't get. I'd like to see them enjoying themselves and really learning." (77)*

High school memories were fresher than elementary ones, but some talked about elementary school.

> *"I was reminded of how I didn't like tests as a child when I saw how nervous some second graders got over achievement tests." (71)*

Figure 2. Comparison of Student Teachers with Their Cooperating Teachers: Behaviorist Beliefs

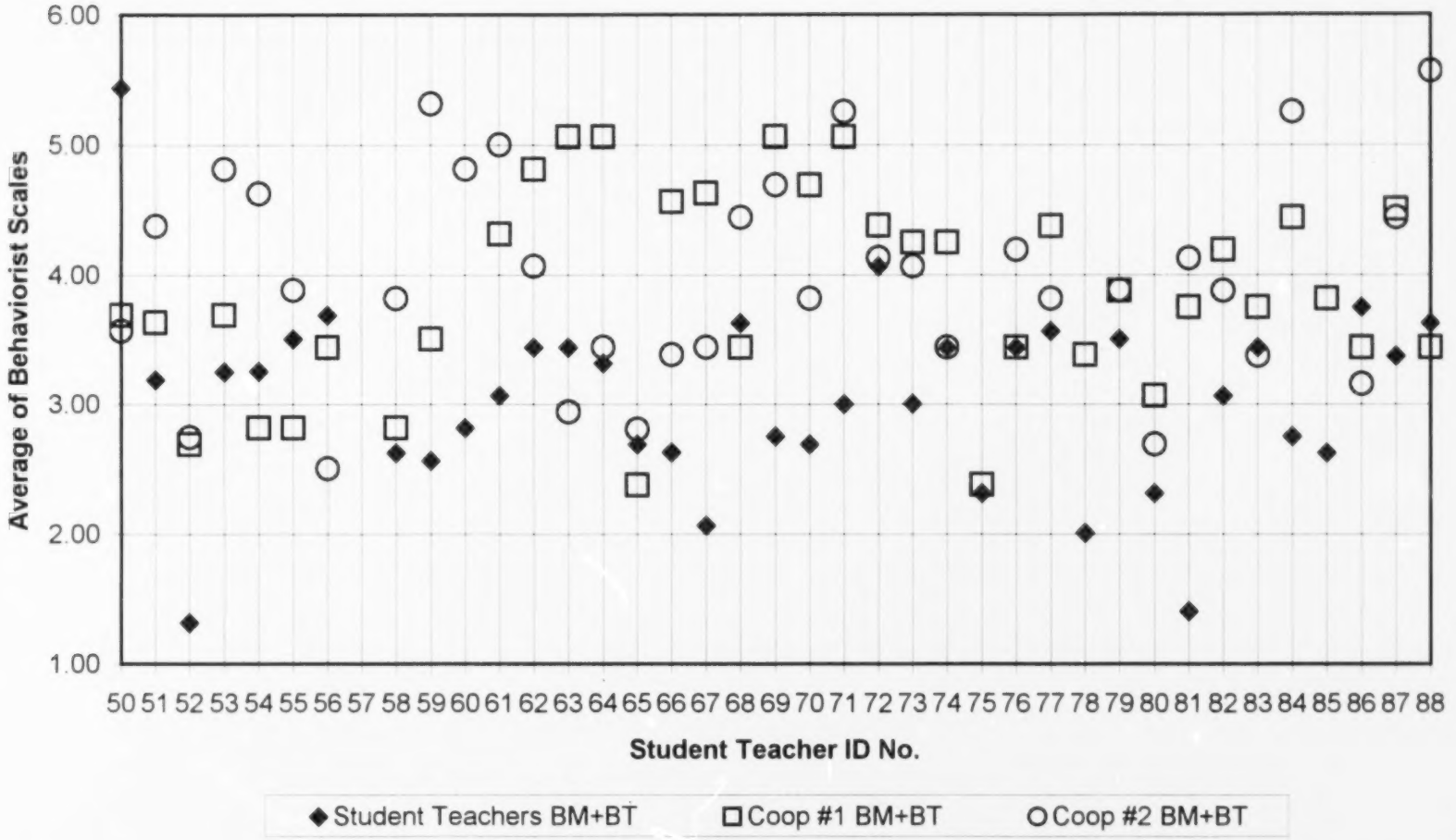
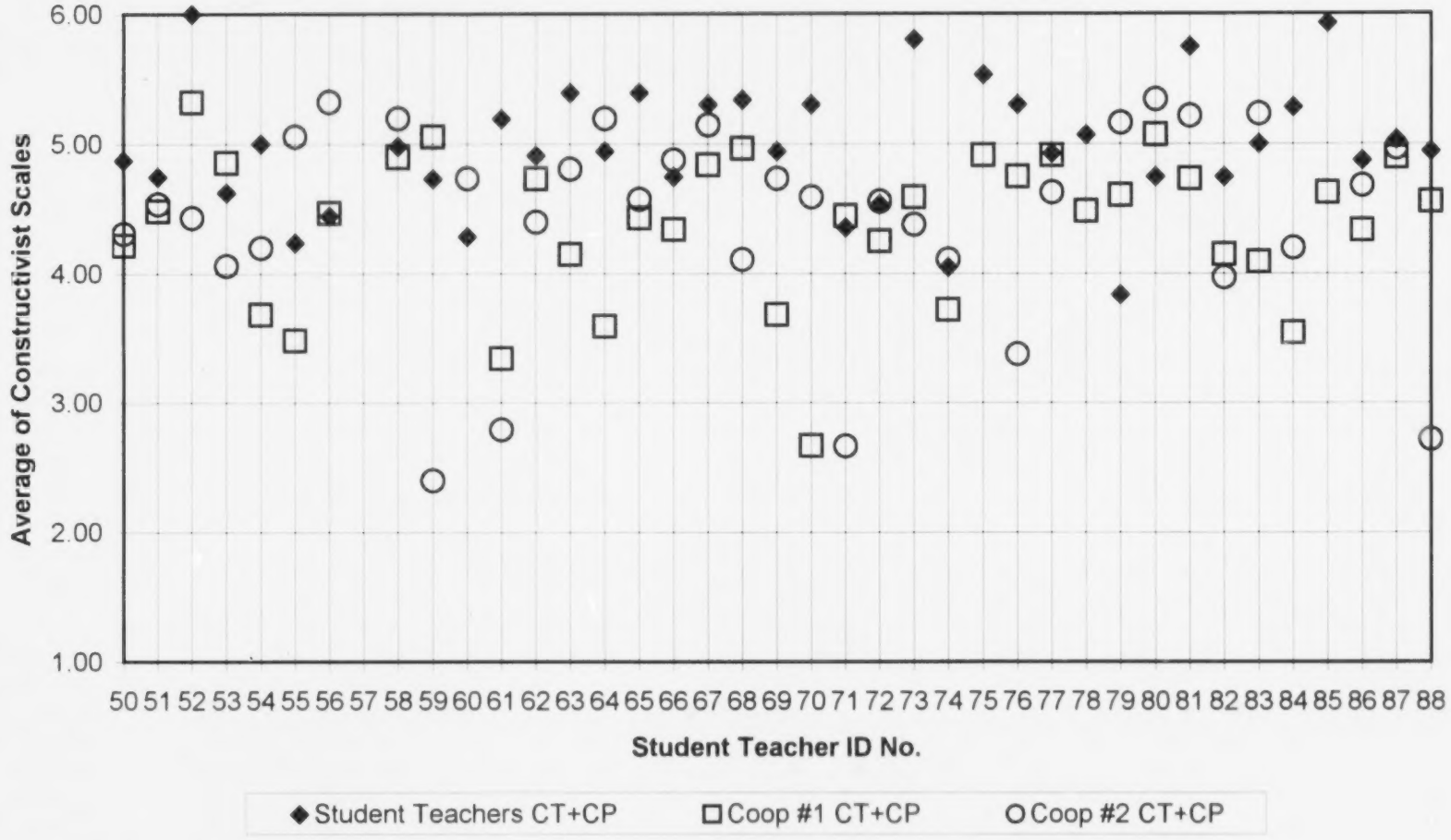


Figure 3. Comparison of Student Teachers with Their Cooperating Teachers: Constructivist Beliefs



Three student teachers talked about living in classrooms as children because a parent or relative is a teacher.

> *"My mother is a teacher. My grandmother is a teacher. My sisters and my whole family are teachers. It is just natural that if my cooperating teacher says we need to cover these things that I'll start planning. I wasn't taught." (76)*

Five student teachers are parents and referred frequently to what they have learned from their own children and their children's friends.

> *"I think parents are vital. I know a lot of teachers don't like parents to come into the learning environment, but I think anything that teachers do to encourage parents to take an active role in their child's learning is very important. I learned this from being a parent. Some of my ideas have changed as I see how other teachers handle situations, but my viewpoints on parents have not and will not change." (86)*

The Impact of Cooperating Teachers and Student Teaching on Students' Beliefs

End of semester interviews provided two ways to analyze how much cooperating teachers and student teaching impacted student teachers' beliefs. First, we asked student teachers directly if they felt their beliefs had changed as a result of student teaching. Second, their interview comments allowed us to estimate how the student teachers would have responded on the Teacher Beliefs Survey if they had taken it again at the end of student teaching.

When we asked student teachers directly if they believed their beliefs had changed, 46% felt their beliefs about behavior management had changed, but less than 20% felt their beliefs about other areas had change. Table 2 gives their estimates for each area discussed in the interviews.

Table 2. Interview Results

Topics	Number reporting changes (out of 35 students)	Percentage reporting changes
Classroom learning environment	4	11%
Behavior management	16	46%
Curriculum	4	11%
Assessment	7	20%
Teaching strategies	6	17%
Working with parents	7	20%

It is possible that student teachers could be underestimating the impact of student teaching experiences on their beliefs. However, five themes emerged in the interviews that support the idea that they have not given up some of their beliefs based on constructivist learning theory. Their future plans include: (a) arranging desks to facilitate students working together [14], (b) setting up a student-center classroom [7], (c) integrating subjects to facilitate students' learning [13], (d) assessing students with a variety of methods [15], and (e) incorporating student-centered teaching strategies [12].

Fourteen student teachers discussed the importance of clustering desks so students could work together easily in cooperative groups.

"After my second experience I saw how beneficial it is to the students to work together. Not only do they help each other out and learn things together, but they are also learning important life skills." (67)

Seven student teachers described their plans to set up a student-centered classroom rather than a teacher-centered one. Their ideas included involving students in creating bulletin boards, displaying students' work, and expecting students to help with classroom tasks, all with the hope of creating student ownership and pride in their classroom.

"I think it should be a student-centered classroom rather than the teacher giving out everything and giving orders. Students should help out in the classroom. I would have a lot of student work displayed around the classroom to let them know they are important." (53)

Thirteen student teachers expressed a strong preference for integrating subjects so they could make learning more meaningful and interesting for students.

"I'd would like the whole day tied together in some way. It seemed so broken up in the class I was in." (52)

"It is hard to teach one subject without the other. You have to have knowledge of all the subjects. They are not separate in life. You can't say a tree is a tree because without science you wouldn't know what it is and without English you couldn't tell what it is and without math you couldn't tell how tall it is. They're integrated in life so you have to integrate them in school." (69)

Seventeen student teachers discussed the importance of using a variety of assessment measures. They didn't see this modeled during student teaching as much as they expected from their college courses.

"I didn't see a lot of methods I studied in college used by my cooperating teachers and I preferred what I learned in college." (71)

"I saw how many teachers do primarily use tests. My cooperating teacher didn't so I also saw how other measures work." (73)

"I will use a variety of assessments, like projects, homework, tests and observations. I won't rely only on tests because some students don't take tests well." (77)

Twelve student teachers talked about their plans to use teaching strategies that create a student-centered classroom.

"When I taught health I gave students a survey. I said, 'Tell me what you would like to learn about.' I think it's interesting for the kids to know that the teacher really does care what we want to learn." (50)

"I want students to be part of their learning. I don't want them to think they have been thrown into a classroom because they are made to go to school. I want it to be fun for them. I realized in my last assignment that for some kids school is a safe haven. That is why they like coming to school because their home life is so bad. I want them to feel safe in school and successful." (68)

Analysis of particular cases with atypical differences between student teachers' and cooperating teachers' beliefs suggests that some student teachers' beliefs were influenced by their cooperating teachers' beliefs. This analysis also points out that student teachers' beliefs may

change more if their initial beliefs are on one of the extremes of the scales. On the behaviorist scales (Figure 2) there are only two cases (ID nos. 50 and 56) in which the student teachers' pre-student teaching scores are higher than their cooperating teachers' scores. In the first case (50) the difference is about two points; based on interview comments, we estimate that the student teacher's beliefs moved down about two and half points to slightly below her cooperating teachers. In the second case (56) the student teacher's beliefs are the same as her first cooperating teacher and about a point above the second one; her beliefs did not appear to change during student teaching. We analyzed three other cases (ID nos. 69, 71, 81) in which the student teachers' beliefs were initially far below both of their cooperating teachers' beliefs. In the first case (69) the student teacher's beliefs appeared to move up two and half points to the same as his cooperating teachers. In the second case (71) the student teacher's beliefs appeared to move up one point toward her cooperating teachers. In the third case (81) her beliefs did not change. In these five cases, three of student teachers' beliefs moved in the direction of their cooperating teachers, which was also toward the center of the scale. Two of the student teachers' beliefs did not appear to change.

On the constructivist scales (Figure 3) there is only one case (79) in which a student teacher's beliefs are considerably below both of his cooperating teachers'. His beliefs appeared to move up about one point to between his cooperating teachers. There are four cases (59, 61, 70, 88) in which student teachers' beliefs were two or more points above one or both of their cooperating teachers' beliefs. In the first case (59) the student teacher's beliefs seemed to move down one and half points to close to her second cooperating teacher's beliefs. In the second case (61) the student teacher's beliefs appeared to move down one point to slightly above both of her cooperating teachers. In the third case (70) the student teacher's beliefs moved down about one half point to the same as her second cooperating teacher. In the last case (88) the student teacher's beliefs appear to move about one and a half points to between her cooperating teachers. In these five cases all of the student teachers' beliefs moved toward their cooperating teachers, which was also toward the middle of the scale. So two influences may explain these apparent changes: (a) influence of the cooperating teachers' beliefs, and (b) the tendency of experience to moderate their views.

In a few cases we had additional information to offer additional possible explanations. Analysis of these cases suggests that the influence of cooperating teachers' beliefs on student teachers' beliefs is more complicated than initial differences in their beliefs. Two cases illustrate two possible factors: (a) the student teacher's confidence based on their success in preservice courses, or their prior experiences with children, and (b) the degree of success a student teacher experiences in his or her student teaching assignments. For example, student teacher 81 is a special case because for one summer , supported by an undergraduate-faculty research grant, she helped develop the Teacher Beliefs Survey. Her beliefs appeared firm and did not change, perhaps because of her extensive reading about behaviorist and constructivist learning theory. The first author was the university supervisor of four student teachers (52, 55, 58, 85) and prior to student teaching these student teachers also took two of her methods courses. She knew these student teachers well and observed their student teaching situations. For example, student teacher 52 is a parent of three preschoolers. On the behaviorist scales she averaged 1.3 and on the constructivist scales 6.0. She student taught the first half of the semester in a four-year old prekindergarten class

and the second half of the semester in a first grade class. Both were located in the same small rural school with only preschool and primary classes. In the first classroom the climate was warm and the schedule flexible, children had choices about what centers to work in, assessment was informal, and parents were welcome. In the first grade there were more requirements to teach particular subjects and use particular materials. Her cooperating teacher helped her learn to stick to a schedule and be firmer with discipline, but also appreciated her creativity and allowed her to deviate from plans in the teacher's guides. At most this student teacher's beliefs moderated on each scale about one half to one point in the direction of her cooperating teachers. It seems that her beliefs were already shaped by her parenting experiences. She gain specific knowledge and skills from each of her cooperating teachers, but neither of her experiences forced her to rethink her basic beliefs. Student teacher 58 illustrates a case in which her student teaching experiences significantly affected her beliefs. Before student teaching, she averaged 2.6 on the behaviorist scales and 5.0 on the constructivist scales. After student teaching it appeared that she moved to 4.0, about the same as her second cooperating teacher, on the behaviorist scales, and 3.5 on the constructivist scales, away from her cooperating teachers and one half point below both. This student teacher had little experience working with children prior to student teaching. She student taught the first half semester in a kindergarten class and the second half in a third grade class. Both classes were in large urban elementary schools in a small city school district. In both assignments, especially the kindergarten class, she had difficulty managing children and was dismayed by the children's lives at home. She gained skills in managing students' behavior and learned to use basal texts for her planning. In both assignments she was allowed to incorporate her own creative ideas, but that was difficult to do when she was focusing on the basics of behavior management and planning.

These cases illustrate that each situation is unique and depends on much more than differences in cooperating teachers' beliefs and the student teachers' beliefs. In the cases of student teachers 81 and 52, their beliefs appeared firm, based perhaps on extensive study in the first case and on parenting experiences in second. Other student teachers who had experience through parenting or paid or volunteer work with children seemed to be clearer and surer about their beliefs. In the case of student teacher 58 her beliefs were perhaps less firm initially and then challenged by two student teaching experiences that she found difficult. For student teachers 81 and 52 both of their student teaching experiences were highly successful and it appears they did not alter their beliefs.

Other Ways Cooperating Teachers Impacted Student Teachers

What Student Teachers Learned

Student teachers' interview responses make it clear that they learned from their cooperating teachers, even if they did not think their beliefs had changed. Seven themes categorize student teachers' comments about what they learned from cooperating teachers: (a) learned discipline techniques from my cooperating teacher [10], (b) didn't like my cooperating teacher's discipline methods [5], (c) needed to use district textbooks [14], (d) observed the use of too many tests [4], (e) learned about teaching strategies from my cooperating teacher's use of APL techniques [9], (f) realized that parents can be helpful [12], and (g) learned that parents need to be kept informed [15].

Sixteen student teachers talked about specific discipline techniques they observed their cooperating teachers use. Most of these discipline systems were based on behaviorist learning theory, with warnings and rewards and consequences for following (or not following) classroom rules. One student teacher described a technique that her cooperating teacher used to encourage students to evaluate their own behavior. This cooperating teacher appeared to be modeling a more constructivist approach, which is consistent with her score on the Teacher Beliefs Survey.

> *"The method she had developed was called a reflection sheet. It gave students responsibility for their own behavior. They would give themselves pluses and minuses and she would check to make sure that they were being honest. I would like to use this idea in the future." (54)*

Five student teachers stated that they did not want to copy some of the techniques they observed their cooperating teacher or others use such as putting a child in the corner or shouting. Student teachers were careful to not seem critical by adding that observing another teacher discipline helped them think about how they would handle a situation, even if they didn't want to copy the methods.

> *"I didn't know what to expect in a second grade. I didn't agree with what my cooperating teacher did, but I understood because she had lots of behavior problems."(74).*

Many student teachers learned that they may be expected to follow district textbooks, even if that is not a teacher's preference. Some saw how their cooperating teachers met this expectation, while incorporating other ideas and materials.

> *"I saw some useful ways to use texts. Some subjects like spelling were just do a page a day, but I would not want to do that all the time." (77)*
>
> *"I learned from my cooperating teacher how to spring board off of basals." (74)*

One student teacher expressed frustration with the requirement of one of her cooperating teachers to follow textbooks.

> *"I had to use texts and follow my first cooperating teacher's schedule. There was no opportunity for reteaching a lesson, even if I thought the students needed it. My other cooperating teacher basically used the texts also, but I could do anything I wanted as long as I got the point across." (71)*

Some student teachers seemed to be resisting the idea of planning their curriculum around textbooks.

> *"I think that I will use the textbooks that I have to only to the minimum and beyond that I would like to pretty much do my own thing. I think I am very geared toward a whole language approach."(56)*

Four student teachers talked about the overuse of tests. Like with textbooks, student teachers seemed to accept the necessity of giving tests, but they were hopeful that they could also use other assessment methods.

> *"If a child is better at speaking or doing a project, I'd count those. I wouldn't rely only on paper and pencil tests, although there'd have to be a lot of that also."(71)*

Student teachers learned many teacher-directed strategies from their cooperating teachers, many of whom had attended a local inservice program called "APL." Nine student teachers

specifically mentioned APL techniques such as *"writing objectives for each subject on the board each morning and having students copy them into their notebooks." (74)*. APL presents teaching strategies and behavior management techniques based primarily on behaviorist learning theory. Student teachers didn't know what APL stood for, but they saw their cooperating teachers enthusiastically demonstrate some of these techniques.

Twenty-three student teachers described how they had learned to work with parents. Student teachers appeared to have little understanding of parents prior to student teaching, unless they were parents themselves or had contact with parents through a job. Several student teachers admitted that they were uncomfortable with parents until they worked with them in their cooperating teacher's classroom.

> *"I learned to be less wary of parents in my classroom. I found out how much help they can be with parties, etc." (74)*
>
> *"I saw some parent involvement before student teaching, but I hadn't really thought about it until my first experience when two or three parents were coming in all the time. One parent made cookies. It was just incredible that she would put in that much time and effort. It showed she really cared about the kids and the class." (76)*

Twelve student teachers explained that before student teaching they did not realize how much some teachers relied on parents.

> *"I definitely wouldn't mind parent support at all. I have been in a class where they are there every other day to help teach math. The kids get very excited to see other people come into the classroom. I'm not going to be a teacher who says you can only come on party day." (78)*

Fifteen student teachers stressed that they will keep parents informed. Student teachers' focus was on eliciting parent reinforcement at home for their own and students' efforts at school.

> *"I hope to have all the parents involved in their child's education. I will be available at home, at school, anytime. I plan on using a homework sheet with a place for parents to write comments and sign it every night. I would like the parents to reinforce at home what children learn at school." (58)*

How Student Teachers Learned from Cooperating Teachers

Three themes summarize student teachers' comments about how cooperating teachers helped them learn: a) modeling by cooperating teachers, [18], b) feedback from cooperating teachers on student teachers' lessons and progress [11], and c) student teachers' opportunities to take risks and find their own style [4]. Seventy one percent of the student teachers mentioned at least one of these themes.

Five student teachers discussed how helpful it was to see ideas studied in college courses modeled in a classroom.

> *"Both of my cooperating teachers were very creative. I learned a lot from them. Their teaching styles were good to pattern after." (72)*
>
> *"I saw him do things that I had learned about and wanted to do, but never saw applied. He made me step back and rethink the way I want to teach. It was like he took me on a hands-on tour of everything I had learned in college." (67)*

Student teachers also cited examples of cooperating teachers modeling ideas that they do not admire or want to copy. Although the experience was less satisfying, most student teachers were careful to not sound too critical. They felt they were able to learn from the negative modeling.

> *"I learned a lot of things that I wouldn't want to do." (54)*
> *"My ideas were intensified or not depending on which assignment I was in. I wanted to emulate my first cooperating teacher. I learned by negative example from my second one." (74)*

Eleven student teachers emphasized how helpful it was to receive constructive feedback from their cooperating teacher on their lessons and overall progress. They didn't necessarily want to be praised because they knew that their lessons were not always good. They appreciated being able to talk to their cooperating teacher for even five or ten minutes a day just to get this feedback.

> *"Both of my cooperating teachers gave me oral and written feedback and taught me how to be more flexible with students." (60)*
> *"My cooperating teacher was incredible; she received a national teaching award while I was there. She's certainly someone I want to emulate. She was never negative. She kept a weekly notebook with ideas for me to work on and conferenced with me about them." (74)*

Four student teachers discussed how important it was to have the opportunity to try out their own ideas and begin to develop their own teaching style.

> *"Both coops let me try whatever I wanted to do, even if they thought it might not work out the way I wanted it to. They were very willing to try anything I wanted. They trusted me enough to try and they said that if it doesn't work out, it will be a learning experience. The pressure was off. If it didn't work they weren't going to be mad about it." [72]*

Other Influences on Student Teachers' Learning During Student Teaching

Student teachers identified two other influences, besides cooperating teachers, on their learning during student teaching: (a) other teachers in the school [6], and (b) working with students [13].

Nine student teachers talked about the benefits of observing other teachers and team-teaching with them. Our teacher education program requires student teachers to observe a minimum of five teachers in each experience, in hopes that student teachers will observe a variety of teaching styles and interact with staff throughout the school. In many schools student teachers felt they were adopted and helped by many teachers.

> *"Other teachers in the building would say, 'I've tried this and it seems to work. Or why don't you try this. It didn't work for me, but it might work for you.' Everyone was willing to help. They know how hard it is because they were student teaching at one time." [62]*

Student teachers stated that they frequently planned and team taught with other teachers in the same department, at the same grade level, and with special teachers who came into their classrooms to work with particular children with special needs. One student teacher commented

on the benefits of hearing another teacher's perspective or seeing another teacher work with their class.

> *"One day the classroom teacher would teach, the next day I would teach, and the third day the resource room teacher would teach. This would give the students three options, which is really important when working with different learning styles. I learned about the benefits of team teaching and also of working with other classes." (60)*

Ten student teachers talked about how working with students allowed them to test out their ideas. In one case discipline issues made the student more behaviorist.

> *"During my schooling I was more open minded to progressive teaching or whatever you want to call it, but after actually being with the children and seeing and having to handle discipline problems, I think I have reverted back to a more traditional style." (86)*

Nine of these student teachers emphasized that they became more flexible, especially in working with children with special needs.

> *"Before I went into student teaching, I thought everyone should be treated fairly with the same requirements, but I realized that this can't happen because each child is so different and they all have different baggage." (87)*
>
> *"Generally I think you should have the same rules for all, but I think rules need to be modified for some children. For example, a child who tries but works slowly should not always miss recess; instead the length of the assignment should be adjusted." (71)*
>
> *"I'm more aware now of being flexible. It is not just what I want, but also what the students need. In one assignment we couldn't group kids or they'd always be talking no matter whom you put them with. In the other assignment, which was an inclusion classroom with only twenty students, you had to group them to keep everyone on task together." (80)*

Summary of Results

1. How did student teachers' and cooperating teachers' beliefs about behaviorist and constructivist learning theories compare prior to student teaching? As a group student teachers were more constructivist and less behaviorist than their cooperating teachers. Student teachers identified four important sources of their beliefs prior to student teaching: their teacher education program, their memories from being a student, their experiences as a parent, and their association with parents or relatives who are teachers. Sixty percent of the student teachers mentioned their teacher education program as an important influence prior to student teaching.

2. Did cooperating teachers or student teaching change student teachers' beliefs? When asked directly 46% of the student teachers stated that their beliefs about behavior management had changed during student teaching, but less than 20% felt their beliefs had changed about learning environment, curriculum, assessment, teaching strategies, and working with parents. Student teachers' interview comments support their perception that many of their beliefs based on constructivist learning theory did not change. The influence of cooperating teachers on student teachers' beliefs appears more complicated than initial differences in their beliefs. Student teachers

may be more influenced by cooperating teachers if there are large differences in their beliefs initially or if student teachers' views are on one of the extremes of the scales. Other factors may complicate the influence of cooperating teachers such as: (a) the confidence of the student teachers, based on their successful study or their prior experiences working with children, and (b) student teachers' success in their student teaching assignments.

3. Did cooperating teachers impact student teachers in other ways? Student teachers' interview responses make it clear that they learned from their cooperating teachers and their student teaching experience, even if their beliefs did not change.
From cooperating teachers they learned behavior management techniques, the need to use textbooks and give tests, teacher-directed strategies based on behaviorism, the value of parent volunteers, and the need to keep parents informed.

Cooperating teachers influenced student teachers through modeling, giving student teachers feedback, and encouraging them to take risks. Student teachers also learned from observing and team teaching with other teachers and from working with students.

Discussion

About Behaviorist and Constructivist Learning Theories

Student teachers' beliefs were less behaviorist and more constructivist than their cooperating teachers' beliefs. Although 60% of the student teachers cited their teacher education program as an important source of their ideas prior to student teaching, we have no data to establish that their ideas changed as they progressed through our program. We are giving the Teacher Beliefs Survey now to all students in our entry-level Introduction to Education course to assess their beliefs as they enter our programs.

Figure 1 shows that many student teachers and cooperating teachers in this study are high on both the behaviorist and constructivist scales. It appears that they agree with both behaviorist and constructivist theories of learning. We began this study with the idea that these two theories were contradictory. That is, we assumed that if student teachers' beliefs went up on the behaviorist scales, they would go down on the constructivist scales or vice versa. Kamii et al. (1991) point out that two theories can be contradictory and yet true. "Piaget explained conditioning by saying that all animals adapt to their environment. But human being are more complicated and construct more knowledge than lower animals" (pp. 9-10).In other words behaviorism can explain human learning similar to the conditioning of animals (i.e., drill and practice), but constructivism is needed to explain higher level thinking of humans. It appears that , teachers are applying each theory to different aspects of their teaching. As cited, in the 1980's and '90's teachers have been asked to implement programs based on both learning theories. If some of the programs are incompatible theoretically, teachers may be unaware of the problem or may feel they have no choice about dropping either program.It might be helpful for teacher educators to focus on when to use behaviorist and constructivist learning theories rather than on the superiority of one theory over the other.

About the Impact of Teacher Education

This study suggests that methods courses may be more powerful in shaping students' beliefs than sometimes reported, and that although student teachers learn from their cooperating teachers, their fundamental beliefs about teaching do not change in only one semester. Sixty

percent of the student teachers in this study cited their teacher education program as an important source of their beliefs prior to student teaching. During student teaching they were introduced to the realities of teaching, including many practices based on behaviorist learning theory, as well as some based on constructivist learning theory. Their interview comments make it clear that they did not change many of their beliefs. They seemed to reflect on their observations and experiences, embracing some ideas, withholding judgment about others, and rejecting some, perhaps because they conflicted with beliefs they were not ready to give up.

Each student teacher-cooperating teacher partnership in this study seemed somewhat unique. Some student teachers began with beliefs that were very different than their cooperating teachers; others shared similar beliefs. Some student teachers began with confidence; others were less confident and therefore more open to influence. Some cooperating teachers were good mentors; others were not. Student teachers' beliefs seemed more robust if they began student teaching with confidence. Almost half of the student teachers felt their beliefs about behavior management had changed. Two explanations are offered: (a) many students may have concentrated on managing students' behavior, a survival skill for new teachers; and (b) students were more open to influence in this area because our program didn't prepare them sufficiently.

This study raises two questions that could be tested in future studies:

1. Are the beliefs of confident students more robust? (Confidence could be defined by their grade point in their teacher education program and other criteria such as their experience working with children.)

2. In selecting cooperating teachers are their mentoring skills more important than the consistency of their beliefs with our teacher education program?

About Measuring Student Teachers' Beliefs

We began developing the Teacher Beliefs Survey to conduct a longitudinal study of the impact of our Teacher Education program. We recognized that survey information was limited, but felt it would be useful to have an instrument that we could give to all students multiple times. This study has reinforced the limited value of surveys. The most valuable information from the survey was that student teachers and their cooperating teachers had different beliefs at the outset of student teaching. Development of a second form of the instrument would provide a quantitative measure of their beliefs at the end of student teaching. Development of additional scales would allow comparison of the two theories on other dimensions.

The end-of-semester interviews provided richer, more understandable information, but required much more time for interviewing and data analysis. Interviews helped us understand student teachers' perspectives. Interviews throughout the semester would have provided greater understanding (Johnston 1994) but would have required additional effort. The most information was provided by multiple classroom observations, where the observer could assess the many variables impacting a student teacher's experiences. For many institutions, like ours, multiple interviews and classroom observations of all student teachers would be difficult. It is efficient to have university supervisors conduct the interviews and observations, as in the examples already cited, but the dual roles of supervisor and researcher may introduce bias. This study suggests that a combination of quantitative and qualitative data will be needed to assess the impact of teacher education programs.

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